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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,879	11/27/2002	Christopher A. Newton	BUR920010144	5280

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EXAMINER	
LUND, JEFFRIE ROBERT	
ART UNIT	PAPER NUMBER
1763	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/065,879	NEWTON ET AL.	
	Examiner	Art Unit	
	Jeffrie R. Lund	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-17,19 and 20* is/are pending in the application.

4a) Of the above claim(s) *13-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-12,17,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Supplemental Appeal Brief filed on December 1, 2006, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

P.L

PARVIZ HASSANZADEH
SUPERVISORY PATENT EXAMINER

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Claim 5 recites the limitation "the rings of the first and second types" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 7-9, 11, 12, 17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Deacon et al, US Patent 5,792,269.

Deacon et al teaches a chamber 25 adapted for holding a workpiece 28 10.16 mm (0.4 inches) from a distribution plate 30; an annular ring (baffle plate) with holes for constricting the exhaust gases; and an upper annular ring (insulator) that forms a space between an edge of the upper annular ring and a wall of the chamber that restricts a flow of fluids in the chamber. (Figure 2) The distribution plate 30 having a first plurality of channels 42 for a first fluid to flow into the chamber and a second plurality channels 42 for a second fluid to flow into the chamber, each channel is angled at 72 degrees and arranged in concentric rectangular or circular rings. The channels 42 are also offset from the XY plane at an offset angle α and β (as defined in the applicant's specification in paragraph 53) at a range of angles 0 to ±45° (see Entire document, specifically,

figures 4A, 4B, 6,14-18, 21, and 22). The specific gas supplied to an apparatus is an intended use of the apparatus. The apparatus of Deacon et al is capable of supplying the HF and ammonia to the surface of the substrate.

5. Claims 1, 3, 7, 12, 17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Carpenter et al, US Patent 6,821,347 B2.

Carpenter et al teaches a chamber 120 adapted for holding a workpiece W, and a distribution plate 171b. (Figure 4) The distribution plate 171b having a first plurality of channels 172a for a first fluid to flow into the chamber and a second plurality channels 172a for a second fluid to flow into the chamber, each channel is angled at an angle between 45 and 90 degrees and arranged in circular rings. The channels 172a are also offset from the XY plane at an offset angle α and β (as defined in the applicant's specification in paragraph 53) at a range of angles 0 to ±45° (Figures 5). The specific gas supplied to an apparatus is an intended use of the apparatus. The apparatus of Carpenter et al is capable of supplying the HF and ammonia to the surface of the substrate.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deacon et al, US Patent 5,792,269, in view of Plavidal et al, US Patent 5,718,795.

Deacon et al was discussed above.

Deacon et al differs from the present invention in that Deacon et al does not teach that the dispersion plate is made of polytetrafluoroethylene.

Plavidal et al teaches that the dispersion plate is made of polytetrafluoroethylene (Teflon®) (column 4 lines 48-49).

The motivation for making the dispersion plate out of polytetrafluoroethylene is to provide a material of construction, which is required but not disclosed by Mitani et al and Deacon et al. Polytetrafluoroethylene is well known in the art and is used because it is chemically inert. Furthermore, it has been held that: the selection of a known material based on its suitability for its intended use is prima facie obviousness (*Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945)); and reading a list and selecting a known compound to meet known requirements is no more ingenious that selecting the last piece to put in the last opening in a jig-saw puzzle (325 U.S. at 335, 65 USPQ at 301).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the dispersion plate of Deacon et al out of polytetrafluoroethylene as taught by Plavidal et al.

8. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deacon et al, US Patent 5,792,269.

Deacon et al was discussed above.

Deacon et al differs from the present invention in that Deacon et al does not teach that the ring of the first plurality of channels and ring of the second plurality of

channels have a diameter of 1.75 to 7.04 inches, or that the distance between the upper annular ring and the workpiece is at least 3/8 inch.

The motivation for making the diameter of the ring of the first plurality of channels and the diameter of the ring of the second plurality of channels between 1.75 to 7.04 inches is to optimize the size of the rings to optimize the gas distribution of the rings.

The motivation for optimizing the distance between the upper annular ring and the workpiece is to optimize the flow through the space between the upper annular ring and the workpiece.

Furthermore, it was held in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), by the Federal Circuit that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. (Also see MPEP 2144.04 (IV)(A))

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the diameter of the rings, and the spacing between the upper annular ring and the workpiece.

9. Claims 6 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deacon et al, US Patent 5,792,269, in view of Mitani et al, JP 3-281780.

Deacon et al was discussed above.

Deacon et al differs from the present invention in that Deacon et al does not

teach that the paths of the fluids through the distribution plate includes grooves, that the volume of the grooves is greater than a volume of the channels, and that the first and second fluids do not premix.

Mitani et al teaches an apparatus that includes: a gas distribution plate 112 with a first plurality of channels located in a first groove 22 for providing a first fluid to the chamber, and a second plurality of channels located in a second groove 23 for providing a second fluid to the chamber. The first and second fluids are not premixed. (Figures 1 and 2 and throughout the specification, specifically, working example 1)

The motivation for adding the grooves of Mitani et al to the apparatus of Deacon et al is to prevent the fluids from premixing and to independently control the flow of fluid in each groove to optimize the gas distribution.

The motivation for making the volume of the grooves larger than the volume that the channels is so that the grooves function as plenums to uniformly distribute the fluids to each of the channels. Furthermore, it was held in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), by the Federal Circuit that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. (Also see MPEP 2144.04 (IV)(A))

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made add the grooves of Mitani et al to the apparatus of Deacon et al,

and to make the grooves of Mitani et al with a larger volume than the volume of the channels.

Response to Arguments

10. Applicant's arguments with respect to claims 1, 3-12, 17, 19 and 20 have been considered but are moot in view of the new grounds of rejection.

11. Applicant's arguments filed December 1, 2006 have been fully considered but they are not persuasive.

In regard to the argument:

> Appellants' respectfully submit that the angle of 45 to less than 90 degrees (i.e. 72°) with respect to the XY plane of the distribution plate of Deacon et al. could not be the offset angles α_1 and β_1, and α_2 and β_2, of claims 3 and 19 because FIG. 19 of Deacon et al. only teaches two dimensions. FIG. 19 of Deacon et al. only teaches the bottom surface of the distribution plate which is perpendicular to the XY plane of Deacon's distribution plate. Nowhere does Deacon et al. teach or suggest offset angles with respect to the XY plane.
>
> Deacon et al. describes that FIG. 19 "shows a hole pattern with alternating directions of holes adjacent one another." Deacon et al., column 8, lines 54 - 56. Nowhere in FIG. 19 or its description does Deacon teach or suggest any plane other than the surface of the distribution plate. Further, the only directions Deacon discloses are "alternating directions of holes adjacent one another" in the surface of the distribution plate. Id. Deacon does not disclose the orientation of FIG. 19 with respect to the wafer or substrate. Appellants respectfully contend that Deacon et al. is incapable of teaching or suggesting the offset angles of claims 3 and 19, because Deacon et al. only teaches or suggest one plane or two dimensions in all its Figures and disclosure.
>
> Appellants respectfully submit that contend that the Examiner has not presented an argument directed to the preceding requirements of claims 3 and 19. The Examiner maintains that Deacon et al. teaches Appellants offset angles α_1 and β_1 and α_2 and β_2 of Claims 3 and 19. Yet FIG. 19 of Deacon et al. only teaches two dimensions.

The Examiner disagrees. The Applicant has misunderstood the drawings of Deacon et al. Figure 6 of deacon shows the XY plane. Figures 10-24 show the XZ plane. When taken together they present a three dimensional view of the showerhead. The α_1 and β_1 and α_2 and β_2 offset angle is represented by the angle between the arrows. For example, looking at figure 10 all the arrows lie in an XY plane and face the same direction so there is not α_1 and β_1 and α_2 and β_2 offset. In figure 11, all the arrows lie in

the XY plane but half the arrows are offset 180 degrees.

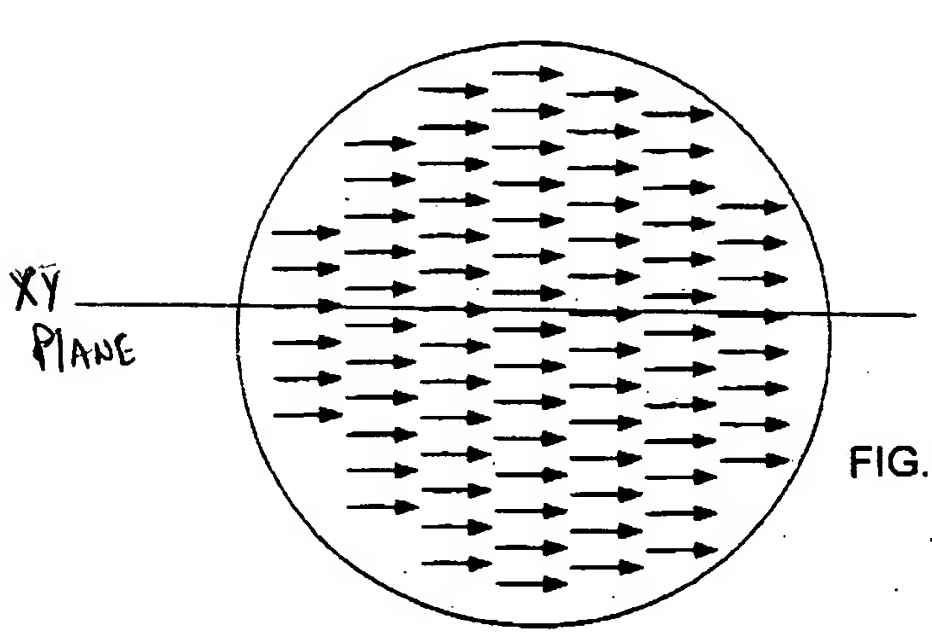

FIG. 10

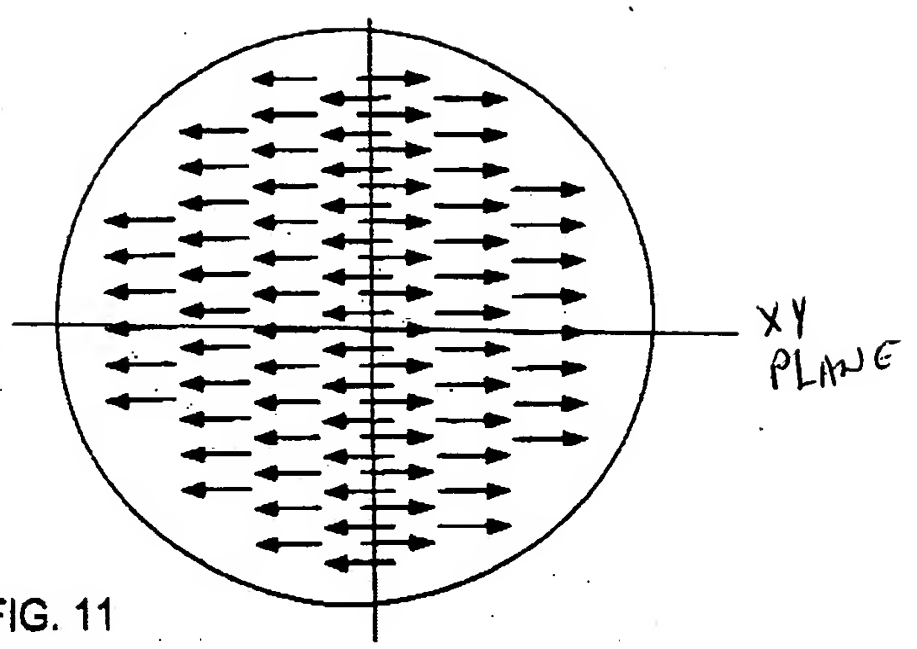

FIG. 11

Figures 12 through 24 clearly show a wide variety of off set angle. Figure 21 clearly shows an offset of ±45°.

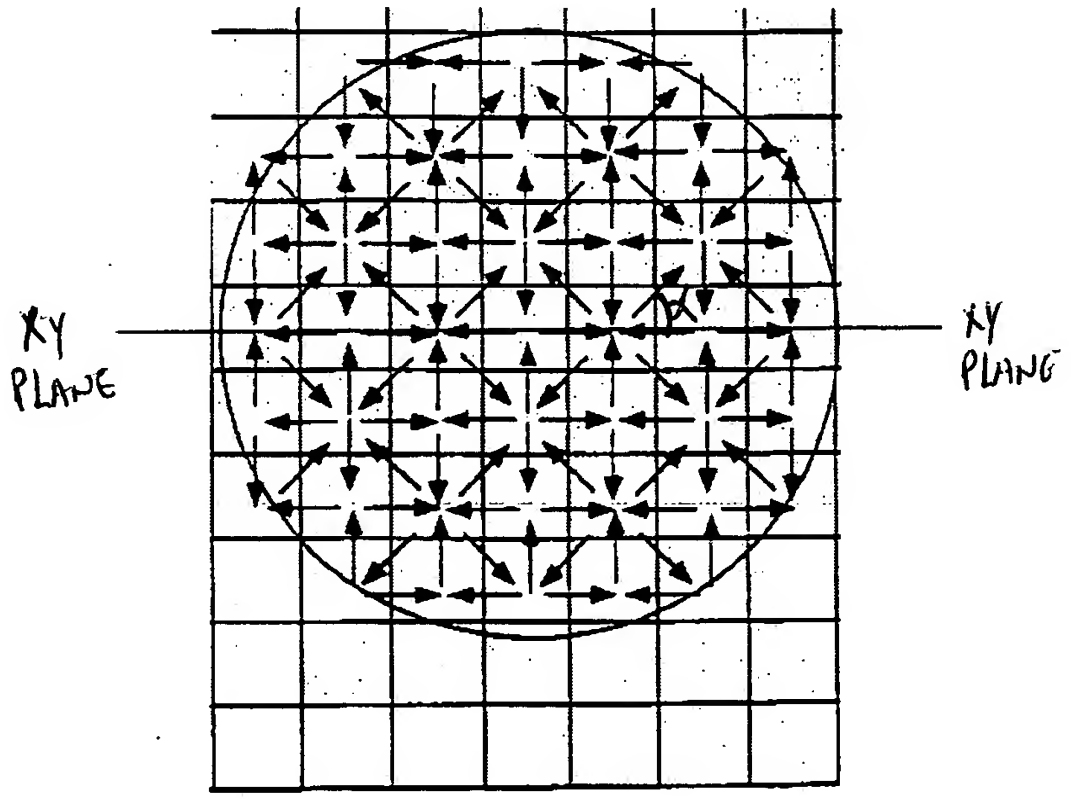

FIG. 21

Thus, Deacon et al clearly teaches a three dimensional showerhead with α_1 and β_1 and α_2 and β_2 offset of ±45°.

In regard to the argument that there is no motivation for the combination of Deacon et al and Plavidal et al, the Examiner disagrees. Both Deacon et al and Plavidal et al provide motivation for the combination. Deacon et al requires a material from which to make the gas distribution plate, but does not disclose one. One of ordinary skill in the art seeking to build the gas distribution plate would be motivated to look for common materials from which to make the gas distribution plate. Such a search would lead to Plavidal et al, which clearly teaches the use of polytetrafluoroethylene in a gas distribution plate. Thus, the motivation for the combination of Deacon et al and Plavidal et al is provided by both prior art references.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches the technological background of the invention.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (10:00 am - 9:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 123-456-7890. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeffrie R. Lund
Primary Examiner
Art Unit 1763

JRL
3/13/07